

Benefits, Costs, and Explanation of the High/Scope Perry Preschool Program

Lawrence J. Schweinhart
High/Scope Educational Research Foundation

Paper presented at the
Meeting of the Society for Research in Child Development
Tampa, Florida
April 26, 2003

Abstract

The High/Scope Perry Preschool Study is a study of the effects of a high-quality preschool program for children born in poverty. Randomly assigning 123 children to program or no-program control groups, the study has had little attrition on a variety of measures from age 3 to age 41. It found evidence of preschool program effects on children's readiness for school and their subsequent educational success, economic success in early adulthood, and reduced number of criminal arrests throughout their lives. These benefits add up to a large return on public investment. This study combines with the Abecedarian Study and the Chicago Child-Parent Centers Study presented in this session to provide strong, robust evidence of the lasting effects of high-quality preschool programs on young children living in poverty. The continuing challenge is to take such programs to scale so that all preschool programs for young children living in poverty have similar effects.

Role of This Study

The High/Scope Perry Preschool Study is one of the pioneering studies of the preschool program research tradition. It was one of the first studies of the effects of preschool education on children living in poverty and one of the few to involve random assignment of children to program and no-program control groups. It was one of the first to identify lasting program effects on participants' later educational achievement, economic success, and avoidance of criminal activity; and to find a return on public investment in the program. This study was one of the first to take its findings beyond professional circles and into the public debate.

But being alone is not a good thing in science. Replication of findings is critical to the growth of scientific knowledge, especially when findings are remarkable. By their nature, pioneering studies have not anticipated all the questions that new generations of researchers and practitioners bring to the endeavor. In the matter of long-term preschool program research, several aspects of replication are important. First, it is important simply to confirm the finding that high-quality preschool education for children living in poverty can have positive long-term effects. Second, it is important to identify what conditions of context, population, and treatment lead to positive long-term effects and what conditions do not. Third, it is important to determine whether the effective conditions are robust and easily achieved or tenuous and difficult to achieve. How hard is it to go from what is possible to what is typical, to go from the extraordinary findings presented in the studies presented here to achieving the same findings in preschool programs throughout the U.S. and around the world?

Before trying to answer these questions, let's begin at the beginning. Let's take a look at the methodology and findings of the High/Scope Perry Preschool Study. Then let's look at the three studies together, to see just how far we can go in answering these challenging questions of generalizability and how to apply policy research to the development of sound public policy.

Methodology

The High/Scope Perry Preschool Study examines the lives of 123 African Americans born in poverty and at high risk of failing in school (Schweinhart, Barnes, & Weikart, 1993). At ages 3 and 4, we randomly divided these individuals into a group who received a high-quality preschool program and a group who received no preschool program. We collected data on both groups annually from ages 3 through 11 and at ages 14, 15, 19, 27, and, recently, 39-41. The study has had little attrition, with a median across all measures of only 5% of cases missing. After each phase of data collection, we analyzed the data and wrote reports of the study. This study demonstrates the power of an experimentally designed longitudinal study to reveal program effects, even decades after the program.

The Perry study has followed the lives of 123 persons who originally lived in the attendance area of the Ypsilanti (Michigan) school district's Perry Elementary School. Project staff identified children for the study from a census of the families of students then attending Perry School, referrals by neighborhood groups, and door-to-door canvassing. Staff identified families of low socioeconomic status by their low scores for parents' years of schooling, parents'

occupational levels, and rooms per person in their households. They used the Stanford-Binet Intelligence Test (Terman & Merrill, 1960) to assess the intellectual performance of the preschoolers in these families, selecting for the study those whose IQs at this initial testing were in the range of 70 to 85. Children entered the study in five successive classes annually from the fall of 1962 to the fall of 1965. Program-group children attended the preschool program at ages 3 and 4, except for the oldest class, who attended only at age 4. All study participants were African-American, as was almost everyone in the Perry School neighborhood. Limiting the sample to African-American children removed racial variation from the design. Obviously, children of different races differ in many important ways, but there is little reason to think that they respond differently to preschool education.

The scientific strength of this study, its ability to assess preschool program effects even many years later, is due primarily to an experimental design in which study participants were randomly assigned to one of two groups: a program group enrolled in the preschool program or a no-program group not enrolled in any preschool program. Each fall, staff assigned pairs of study participants matched on initial Stanford-Binet IQ to either of two undesignated groups, then exchanged several pair members so that the groups were matched on mean socioeconomic status, mean intellectual performance, and percentages of boys and girls. By flipping a coin, they randomly assigned one group to the program condition and the other to the no-program condition. They assigned younger siblings to the same group as their older siblings, to prevent the preschool program from affecting siblings in the no-program group; the 123 children in the sample came from 100 families. Fearing overall sample attrition, staff transferred from the program group to the no-program group two children with single mothers employed away from home who did not participate in the program's classes or home visits, so that the program group was defined not by the intent to receive the program but rather by actually receiving it. These procedures resulted in a program group of 58 children and a no-program control group of 65 children.

From October through May each program year, program teachers conducted daily 2½-hour classes for children on weekday mornings and made weekly 1½-hour home visits to each mother and child on weekday afternoons. The program's 4 teachers served 20 to 25 children each school year, a ratio set to accommodate the weekly home visits. The High/Scope preschool education model used in the classroom and home visits was an open framework of educational ideas and practices based on the natural development of young children (Hohmann & Weikart, 2002; Weikart, Rogers, Adcock, & McClelland, 1971). Drawing on the child development ideas of Jean Piaget, it emphasized the idea that children are intentional learners, who learn best from activities that they themselves plan, carry out, and review afterwards. Teachers observe, support, and extend the children's play as appropriate. They arrange interest areas in the learning environment; maintain a daily routine that permits children to plan, carry out, and review their own activities; and join in children's activities, asking appropriate questions that extend their plans and help them think about their activities. Using key experiences derived from child development theory as a framework, adults encourage children to engage in play activities through which they learn to make choices, solve problems, and otherwise engage in activities that contribute to their intellectual, social, and physical development.

This study has accumulated a rich, comprehensive data set on people growing up in poverty, with variables representing their status from birth through childhood and adolescence to adulthood. The many variables encompass demographic characteristics, test performance throughout childhood and adolescence, school success, crime, socioeconomic success, and personal development. The study phases at ages 19, 27, and 39-41 verified information from records against information from study-participant interviews and vice versa. One of the study's special strengths is that attrition in the study sample has been extraordinarily low. The median percentage of missing data across all measures was 5% and the mean was 9%. At age 27, for example, the data collector interviewed 95% of the original study participants and gathered additional data from their school, social services, and arrest records.

The assignment procedures make it highly probable that group comparisons reflect the effects of the preschool program, and comparisons indicating that groups were not significantly different on various background characteristics make it even more likely. The two groups were not significantly different at project entry, even with a probability of less than .10, on children's entry IQ, family socioeconomic status, mother's or father's highest year of schooling, number of children in the family, number of siblings older and younger than the child, child's age, mother's and father's age, or rooms in their home at study entry. During the preschool period but not at age 15, the program-group members had significantly fewer single mothers employed away from home than the no-program-group members (4% vs. 22%), mainly because of the transfer of two children of employed single mothers from the program group to the no-program group.

Results

The study shows that a high-quality program for young children living in poverty, over their lifetimes, improves their educational performance, contributes to their economic development, helps prevent them from committing crimes, and provides a high return on taxpayer investment.

In educational performance by age 27, the program group had completed a significantly higher ($p < .05$, two-tailed) level of schooling than did the no-program group; 71% of the program group, but only 54% of the no-program group, graduated from either regular or adult high school or received General Education Development certification. As compared to the no-program females, the program females had a significantly higher rate of high school graduation or the equivalent (84% vs. 35%). The finding of a preschool-program effect on the high school graduation rate is important because it is a sort of gateway to other long-term effects and because it has been corroborated in a growing number of other studies of preschool-program effects.

Previous findings for educational performance indicated that the program group spent fewer than half as many years in programs for educable mental impairment as the no-program group (group means of 1.1 years vs. 2.8 years). On tests of educational performance, the program group significantly outscored the no-program group on: (a) a test of general literacy at age 19 and sections of this test at age 27; (b) a school achievement test given at age 14 and its reading, language, and arithmetic subtests; and (c) several intellectual and language tests given from after the first preschool year up to age 7 but not afterwards, establishing an effect on children's school readiness. This apparent fade-out of gains in children's intellectual

performance found in this study has also been found in some studies of Head Start programs (McKey et al., 1985); nevertheless, the High/Scope Perry Preschool Study went on to document dramatic long-term, real-life program effects.

Regarding economic development, 29% of the program group reported monthly earnings at age 27 of \$2,000 or more, significantly more than the 7% of the no-program group who reported such earnings. For males, the difference was better-paying jobs: 42% of program males as compared to only 6% of no-program males reported monthly earnings of \$2,000 or more. For females, the difference was in employment rates: 80% of program females but only 55% of no-program females were employed at the time of the age-27 interview. At age 27, significantly more of the program group than the no-program group owned their own homes (36% vs. 13%) and owned second cars (30% vs. 13%). According to social services records and interviews at age 27, only 59% of the program group as compared to 80% of the no-program group received welfare assistance or other social services as adults.

Regarding crime prevention, police and court records showed that program group members averaged 2.3 arrests by age 28, significantly fewer than the 4.6 arrests averaged by no-program group members. Only 7% of the program group had been arrested five or more times as compared to 35% of the no-program group. Only 12% of the program males had been arrested five or more times as compared to 49% of the no-program males, one fourth as many. Only 7% of the program group had ever been arrested for drug dealing, significantly fewer than the 25% of the no-program group. Two other studies have found such program effects on crime (Lally, Mangione, & Honig, 1988; Reynolds, Temple, Robertson, & Mann, 2001).

A benefit-cost analysis was conducted by estimating the monetary value of the program and its effects in constant dollars discounted annually at 3% (Barnett, 1996). Although the analysis included economic benefits to program participants, we present here only the economic benefits to the public, as taxpayers and as potential crime victims. In 2001 dollars per study participant, the average annual cost of the program was \$8,287; 45 of the program participants attended for two years and 13 attended for one year. Thus, the discounted, average cost of the program, used in the cost-benefit analysis, was \$14,716 per participant.

For this cost, the program yielded public benefits of \$105,324 per participant, a cost-benefit ratio of 7.16 to 1. Sources of benefits per participant were, in order of magnitude:

- ✓ \$68,584 saved by the potential victims of crimes never committed, based on the typical in-court and out-of-court settlements for such crimes
- ✓ \$15,240 in reduced justice system costs
- ✓ \$10,537 brought in by increased taxes paid by preschool-program participants because they had higher earnings
- ✓ \$7,488 saved in schooling, due primarily to reduced need for special education services, and despite increased college costs for preschool-program participants
- ✓ \$3,475 in reduced welfare costs

The program was an extremely good economic investment, comparing favorably with alternative uses of public resources and even with private-sector investments.

Some would argue that exact program replication is the only way to replicate these effects; others would say that some flexibility is allowable. For example, by increasing the number of children per teacher from 5.7 to 8.0, the program's cost per child per year could be reduced to \$5,904 – less than the average cost of Head Start programs in 2001 – with no necessary loss in quality or benefits. But of course staff-child ratio is only one of the several major variables comprising the preschool program.

These economic benefits were identified through age 27 and originally reported in 1993 (Barnett, 1995; Schweinhart et al., 1993). Additional data have recently been collected through ages 39 to 41, including data on study participants' health, incarceration, and their children's performance. At this point, it is unclear whether the benefits to participants' economic status, based on earnings and employment status, lasted into midlife. But it is clear that program participants continued to commit half as many violent crimes as non-participants and that subsequently, the number of them in prison, and the time they spent there, was substantially less than for non-participants.

A causal model using the data from this study suggests that preschool program experience improves children's intellectual performance at school entry, which in turn improves their school motivation, makes them less likely to require special education for mental impairment, and improves their literacy. Their improved school motivation also enables them to increase their highest year of schooling, which leads in adulthood to higher monthly earnings and less chance of being arrested for criminal activities.

This causal model, however, does not take into account measurement error and may thereby make it more complex than it needs to be, conveying as it does the image of a preschool program effect being passed around from variable to variable. An alternative way of thinking is that the preschool program had a multivariate effect that expressed itself more definitively first on one variable, then another, due to the imprecise measurement of these variables at various times, but maintained an underlying multifaceted unity. Thus, for example, the program did not affect children's school motivation through its effect on their intellectual performance at school entry, but rather, it affected both intellectual performance and school motivation from the beginning. Taken a step further, the program did not affect participants' criminal activities through a complex chain of variables, but rather it affected their antisocial behavior from the beginning, although this effect was not definitively measured until arrests provided such measurement years later. From this perspective, the multifaceted preschool program effect has enduring dimensions of intellectual, productive, and social/antisocial behavior.

Three Studies

There are some provocative differences between the three studies presented in this session – the Abecedarian Study, the Chicago Child-Parent Centers Study, and the High/Scope Perry Preschool Study. The Abecedarian and High/Scope studies both have an experimental design based on random assignment of children. The Chicago study has a quasiexperimental design based on identification of existing groups of children and, thus, has more challenges to its internal validity. The Chicago and High/Scope studies found evidence that their preschool programs helped prevent crime. Indeed, the High/Scope study continues to find such evidence

even at ages 39 to 41. But the Abecedarian study found evidence that its preschool program did not help prevent crime. Why the difference? The studies differ in specific outcomes and in program specifics. Regarding outcomes, it may be that there simply was not enough crime in the Abecedarian study for a group difference in crime to appear. This lack of crime might have been due to the relative youth of the study participants when arrest records were collected or the relative lack of crime in the geographic area or both. But it is also possible that the lack of a group difference in crime was due to program differences, intended or unintended. The High/Scope curriculum taught children to make plans and anticipate consequences, whereas the Abecedarian program did not, and both habits probably helped prevent crime. On the other hand, the Chicago Child-Parent Centers did not focus on such objectives either and, nevertheless, had a lower crime rate. Given that the High/Scope midlife findings are finding an even stronger and longer effect on crime prevention, this question will continue to be asked.

These three studies also share a growing number of characteristics. They are all longitudinal studies of the effects of good preschool programs on young children at risk of school failure. They have all collected data and found preschool program effects throughout childhood and adolescence and into adulthood. As of now, all three have conducted cost-benefit analyses of their programs and effects and found significant, positive returns on program investment by taxpayers.

As such, they bear testimony not only to the potential lasting effects of good preschool programs on young children living in poverty, but also to the robustness of this claim in the face of variability in contexts, preschool programs, and populations served. At the same time, these studies prompt continued caution about generalizing their claims to all preschool programs. The High/Scope and Abecedarian programs were model programs, run under the watchful eyes and with the active support of scientists and expert program developers. The Chicago Child-Parent Centers were model programs too, but in another sense, spread across multiple sites in a great city, under the watchful eyes and with the active support of attentive administrators. These were all adequately supported, professionally run programs; they do not generalize to programs that are not adequately supported and professionally run.

Beyond These Studies

These studies suggest that high-quality programs for young children produce significant long-term benefits because they provide children with significant learning opportunities, involve parents as full partners with teachers in supporting their children's development, and provide teachers with systematic inservice curriculum training and supportive curriculum supervision.

They show what Head Start and other early childhood programs can achieve if they are done right. Head Start and state prekindergarten programs are, by and large, service programs for children living in poverty, including some outreach to parents and, in the case of Head Start, meals and health care for children and social services for families. According to a national survey of High/Scope trainers, one-fourth of the nation's Head Start programs used some or all elements of the High/Scope Curriculum that was developed and used in the Perry program (Epstein, 1993). The Head Start Family and Child Experiences Survey (FACES, McKey, 2003) estimated that one-fifth of Head Start classes used the High/Scope educational model in 2002.

But High/Scope is the exception rather than the rule. Most Head Start and state prekindergarten programs do not use a validated educational model. While the Abecedarian program and Chicago Child-Parent Centers programs may be emulated, they are not replicated.

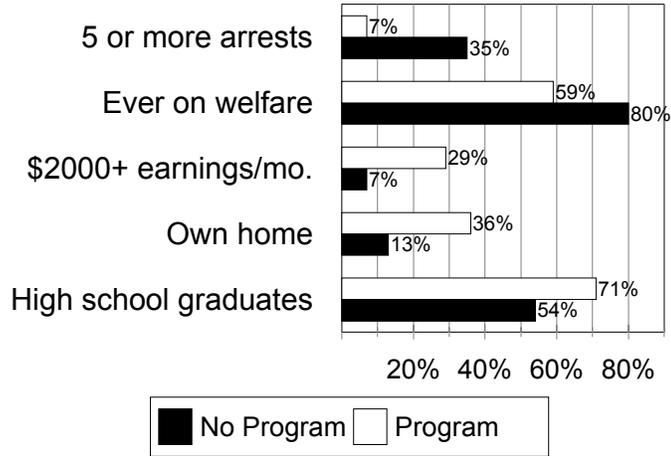
In order for teachers to engage in the practices that contribute to children's long-term development, they need to learn these practices through systematic inservice curriculum training and supportive curriculum supervision. According to the national High/Scope Training of Trainers evaluation (Epstein, 1993), systematic inservice curriculum training is most successful in promoting program quality when an agency has a supportive administration that includes a trained curriculum specialist on staff who provides teachers with hands-on workshops, observation and feedback, and follow-up sessions. Effective trainers focus on a coherent, validated, developmentally appropriate educational model. The Training of Trainers evaluation found that each certified High/Scope trainer worked with an average of 25 teachers and assistant teachers in 13 classrooms; and that the teachers they trained scored significantly better than comparable teachers without such training not only in their understanding of the High/Scope model, but also in their actual implementation of the approach. The evaluation also found that children in the High/Scope classrooms scored significantly higher than children in comparison classrooms in initiative, social relations, music and movement, and overall development. The FACES study found that children in Head Start programs in which most classrooms use the High/Scope model experienced statistically significant gains on the Woodcock-Johnson test of letter and word recognition (Woodcock & Mather, 1989, 1990) from fall to spring. This was over and above the effects of other teacher and child characteristics, and High/Scope was the only model for which such a gain was found (Zill & Resnick, 2002).

As much as these findings support the extraordinary value of high-quality Head Start and similar programs in breaking the cycle of poverty, such programs are only part of the solution. To address the problems of poverty, welfare dependence, crime, drug abuse, and unemployment, governments must also employ a range of other social policy strategies. Affordable housing, ready access to health care, effective job-training programs, reduced institutional racism, and improved educational opportunities at all levels are essential. High-quality preschool education should be part of a multifaceted effort to solve our social problems; it is far from the only solution. Its role should be neither overrated nor underrated.

References

- Barnett, W. S. (1996). *Lives in the balance: Benefit-cost analysis of the Perry Preschool Program through age 27*. Monographs of the High/Scope Educational Research Foundation. Ypsilanti, MI: High/Scope Press.
- Epstein, A. S. (1993). *Training for quality: Improving early childhood programs through systematic inservice training (Monographs of the High/Scope Educational Research Foundation, 9)*. Ypsilanti, MI: High/Scope Press.
- Hohmann, M., & Weikart, D. P. (2002). *Young children in action: A manual for preschool educators (rev. ed.)*. Ypsilanti, MI: High/Scope Press.
- Lally, J. R., Mangione, P. L., & Honig, A. S. (1988). The Syracuse University Family Development Research Program: Long-range impact of an early intervention with low-income children and their families. In D. R. Powell (Ed.), *Parent education as early childhood intervention: Emerging directions in theory, research, and practice* (pp. 79-104). Norwood, NJ: Ablex.
- McKey, R.H. (2003, Winter). The Head Start Family and Child Experiences Survey: What are we learning about program quality and child development? *Children and Families: The Magazine of the National Head Start Association*, 62-64.
- McKey, R. H., Condelli, L., Ganson, H., Barrett, B. J., McConkey, C., & Plantz, M. C. (1985). *The impact of Head Start on children, families and communities* (Final report of the Head Start Evaluation, Synthesis, and Utilization project). Washington, DC: CSR.
- Reynolds, A. J., Temple, J. A., Robertson, D. L., & Mann, E. A. (2001). Long-term effects of an early childhood intervention on educational achievement and juvenile arrest: A 15-year follow-up of low-income children in public schools. *Journal of the American Medical Association*, 285, 2339 - 2346.
- Schweinhart, L. J., Barnes, H. V., & Weikart, D. P. (1993). *Significant Benefits: The High/Scope Perry Preschool Study Through Age 27. (Monographs of the High/Scope Educational Research Foundation, 10)*. Ypsilanti, MI: High/Scope Press.
- Terman, L. M., & Merrill, M. A. (1960). *Stanford-Binet Intelligence Scale Form L-M: Manual for the third revision*. Boston, MA: Houghton-Mifflin.
- Weikart, D. P., Rogers, L., Adcock, C., & McClelland, D. (1971). *The Cognitively Oriented Curriculum: A framework for preschool teachers*. Urbana, IL: University of Illinois.
- Woodcock, R. W., & Mather, N. (1989, 1990). WJ-R test of achievement: Examiner's manual. In R.W. Woodcock & M.B. Johnson, *Woodcock-Johnson Psycho-Educational Battery - Revised*. Chicago: Riverside.
- Zill, N., & Resnick, G. (2002, June 26). *Relationship of classroom quality and type of curriculum to children's progress in Head Start*. Presentation at the National Head Start Research Conference, Washington, DC.

High/Scope Perry Preschool Study Major Findings at Age 27



High/Scope Perry Preschool Study Public Costs/Benefits per Participant

